Credibility in Monetary Policy

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Abstract

This essay examines credibility in monetary policy. In particular it follows Blinder's (2000) survey in focusing on why such credibility is important and the role that central bank transparency plays in determining it. It also considers what happens when credibility changes. It finds that credibility is particularly important for maintaining low and stable inflation through its effect on inflation expectations and that transparency's role involves influencing those expectations. Improving credibility may actually increase volatility unless central banks take the change into account and adjust their reaction functions accordingly.

1   Introduction

It has often been observed that central bankers are obsessed with their credibility (Shaumburg and Tambalotti, 2007). Why is that? What is credibility? How do you get it?

As with any abstract concept, credibility is difficult to pin down and even more difficult to measure. In a general sense, credibility means that "*a central bank is credible if people believe it will do what it says*" (Blinder, 2000). To be more specific, credibility can be defined by and measured as the extent to which inflation expectations are anchored on a specified target.[1]

This essay examines central bank credibility in monetary policy, focusing on why such credibility is important and the role that transparency plays in determining it. The structure of the paper is as follows. Section two sets out a brief background to credibility in monetary policy by considering a survey of central bankers and economists on the topic. Section three notes why credibility is important, section four looks at its role and section five discusses what happens when credibility changes. This is followed by a brief consideration of the possibilities for further work in this area (section 6) and some brief concluding remarks.

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[1]   For example: monetary policy credibility can be "*measured by the proximity of private-sector inflation expectations for different time horizons to the inflation target. The closer the expectations are to the target, the higher the degree of credibility*" (Svensson,2009) and "*…the credibility of the inflation target – by which we mean the degree to which expectations of inflation are anchored on the target.*" (Amano *et al*, 1998).

2   Background

Blinder (2000) conducted a survey of central bankers and macro and monetary economists in a bid to answer two questions:

> *(1) "Why is credibility so important to central bankers?"*
>
> *(2) "How can a central bank create or enhance credibility?"*

In brief, the responses to his survey highlighted the fact that central bankers and economists believe that credibility is important for a number of reasons, primarily to help keep inflation low and to enable less costly disinflation. The general consensus of the survey was that the best ways to establish or maintain credibility is through central bank independence, historical performance and transparency; not through commitment to a rule or personal incentives.

This essay aims to assess the opinions expressed in Blinder's survey, that (1) credibility is important because it helps to keep inflation low; and that (2) an important way to gain credibility is through transparency. It focuses on the role of credibility in maintaining low and stable inflation because, arguably, many inflation-targeting banks have already achieved this, and so the primary importance of credibility for them is the way in which it helps (or hinders) the maintenance of that level.

Transparency is considered because I take it as given that historical performance is an effective way to gain credibility – after all, this is fairly intuitive. A discussion of some of the

implications of changing credibility and a suggestion for further empirical work follows.

3   The importance of credibility

Credibility is often defined by the degree to which inflation expectations are anchored on the inflation target. Blinder illustrates why this is important with a simple model of the expectations-augmented Phillips curve. Using his example:

$$\pi_t = \pi^e_t - \beta(u_t - u^*_t) + \gamma \mathbf{z}_t + \varepsilon_t$$

where π_t is actual inflation at time t, π^e_t is expected inflation, $u_t - u^*_t$ is the deviation of unemployment from its natural rate and $\mathbf{z}_t$ is a vector of supply-side variables (eg. oil prices).

As can be seen, expected inflation influences actual inflation. This occurs through the impact of expected inflation on price and wage setting behaviour. If expectations are anchored on the target then there is less inflationary pressure, thereby making it easier for the central bank to maintain low and stable inflation (Bean, 2005). A high degree of credibility is desirable because it means expected inflation is close to the target and there is a shorter time lag between monetary policy and its effects (Amano *et al*, 1998; Dillén and Nilsson, 1998). This is generally a desirable state of affairs, although changing credibility can cause problems, upon which I will elucidate later.

4   The role of transparency

In this context, "transparency" means giving the public insights into the central bank's decisions and decision making

process so that they are not 'surprised' by those decisions. Why do central bankers and economists rank transparency as an important element in establishing or maintaining credibility?

Establishing credibility through historical performance can be "time-consuming and costly" (Dillén and Nilsson, 1998) (henceforth D&N), whereas establishing credibility by increasing transparency can be relatively quick. This may be one of the reasons why transparency was ranked reasonably highly in Blinder's survey. This then begs the question that D&N ask: "*Is increased transparency invariably beneficial*?" The short answer is "no": there are potential short term costs, although the long run gains dominate these. Transparency can be increased by, among other things: defining an inflation target, publishing prospects and forecasts, and stating how inflation will be brought back to target.

D&N set out three key benefits arising from transparency, namely: credibility gains; a reduction in uncertainty; and positive incentives. With regard to credibility: if a central bank is transparent and it does what it says, then credibility increases and the public is more likely to believe the bank's actions and announcements, and base expectations around the target rate. The potential loss of credibility arising from the central bank reneging on its published statements gives it an incentive to ensure that its forecasting and analysis (upon which its published statements are presumably based) are as accurate as possible, and means that the bank will be less inclined to spring surprises on the public.

However, it is conceptually possible for transparency to actually harm credibility. This could happen, for example, if a

bank's forecasts are inaccurate. In such a case the public can see how poor the forecasts are and hence will place less reliance on the resulting policy statements; where this occurs, more transparency actually leads to lower credibility. What's more, if the bank wants to deviate from its announced intentions then it loses credibility. This problem can be mitigated by the central bank publishing (as the Reserve Bank of New Zealand, RBNZ, does) alternative scenarios based on what it sees as the "*main risks and uncertainties around the central forecast*" (Drew & Karagedikli, 2008).

D&N model these costs through simulations in Rixmod: a general equilibrium model used by the Sveriges Riksbank that is similar to models used by the Bank of Canada (Quarterly Projection Model, QPM) and the RBNZ (Forecasting and Policy System, FPS). This analysis highlights that: (1) transparency is beneficial but transparent announcements should not be rushed and (2) accurate forecasting is highly important so that central banks do not need to deviate from announced policies.

In his comment on D&N's paper, Fischer (1998) notes that transparency is not always needed for credibility: once a central bank establishes a good track record then transparency is no longer so important. Blinder's survey emphasised this: central bankers and economists ranked a history of honesty, central bank independence and a history of fighting inflation above transparency as the best ways to establish and maintain credibility.

Drew and Karagedikli (2008) examine the consequences of transparency for credibility and monetary policy's effectiveness via its impact on New Zealand's yield curve. In New Zealand,

movements in interest rates following monetary policy announcements indicate that both the announcements and inflation target are viewed as credible. Drew and Karagedikli (2008) also refer to a number of empirical studies that claim that the RBNZ is one of the most transparent banks in the world, and that this transparency has resulted in "*reduced output and inflation variability in New Zealand*." This lends weight to the views expressed in Blinder's survey, that transparency is important for credibility and that the most important role of credibility is to keep inflation low.

Drew and Karagedikli (2008) note that in the past it has sometimes been argued that transparent communication creates a risk to central bank credibility. This could eventuate if the bank was unable to keep a commitment that it had made. Drew and Karagedikli (2008) conclude that their findings provide some evidence to contradict this view.

5   Some implications of changing credibility

It is worth restating the potential cost of changes in inflation expectations. If a central bank increases transparency, agents will (hopefully) change their expectations to the extent that they see announcements as being credible.

A central bank's model contains a specification and estimate of these expectations. These affect actual inflation, the time that it takes for monetary policy to take effect, and therefore the appropriate short-run interest rate in the model. If expectations change then the accuracy of analyses (and

consequently their credibility) may be damaged. It is difficult to forecast (or even measure) this change in expectations and consequently it is difficult to formally include it in a model.

In their RIXMOD simulations, D&N also find that when transparency (and therefore credibility) increases, the central bank's response function needs to be adjusted to take account of changing expectations and the fact that this may shorten the control lag between monetary policy actions and their effect on the inflation rate, thereby requiring shorter forecasting horizons. If adjustments to shorten the horizon are not made, volatility may actually increase. The precise effects on expectations need to be carefully considered when an attempt is made to increase credibility via transparency.

D&N do note however, that these effects only occur when the degree of transparency changes and therefore any costs arising from increased volatility are only short-run; in the long-run, the benefits of increasing transparency outweighs its short-run costs.

Amano *et al* (1998) (henceforth AC&M) look at "monetary rules when economic behaviour changes" and obtain a similar result to that of D&N. One of the key behavioural changes that they look at (and the one that we are interested in) is that caused by changing monetary policy credibility. In order to do this they consider an inflation targeting regime with inflation-forecast-based (IFB) rules, where monetary policy is determined by whether the "*rule-consistent forecast of inflation... [differs from] the inflation target*."   These rules are chosen because they perform reasonably well over a range of models and shocks, and are generally accepted as preferable to using a model-specific

rule, which is likely to perform extremely well in one framework but poorly in others (Conway, 2000).

The analysis is carried out using the Canadian Policy Analysis Model (CPAM), a stochastic model. Like many other central banks, the Bank of Canada has made a push for increased credibility by introducing inflation targeting and by increasing "*the transparency and accountability of monetary policy*." The authors track through the evidence for increased credibility in Canada and then outline the model that they use for their results.

Credibility affects the formation of inflation expectations. AC&M vary credibility in the model by varying the weight that agents place on the perceived inflation target when forming expectations.[2] The simulations showed that an increase in credibility resulted in a decrease in inflation's variability. This is consistent with the idea that expected inflation influences actual inflation, and that if expectations are anchored firmly on the target, then inflation volatility would be expected to decrease.

However, the variability of output was observed to increase. With higher credibility the central bank does not have to react as strongly to shocks; resulting in increased volatility of output.

This suggests that if the central bank cares about output volatility, then it needs to adjust its reaction function as credibility changes. This is because (as with D&N), as credibility increases, the lag between a change in monetary policy and its effect on inflation is reduced. The reaction

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[2]   See equations 3 and 4 in their paper.

function needs to change to accommodate this. Once this has been done, AC&M show a reduction in output volatility.

AC&M also note that Taylor rules[3] appear to be less affected by changes in credibility than IFB rules. Svensson (2009) also picks up on this concept, stating that "*more stable inflation expectations… shift the forecast Taylor curve…closer to the origin and make the tradeoff between the stability of inflation and the stability of the real economy more favourable.*" Thus, Taylor rules seem to be more robust in the face of changing levels of credibility. The implication of this is that central banks that push for increased credibility may be wise to follow a Taylor-type rule.

In his comment on AC&M's paper, Hall (1998) cautions that we are still uncertain about some of the fundamentals of stochastic models; so we should view the insights from them as helping us to think about old problems in new ways, rather than allowing us to accept or reject specific policy rules or reaction functions. He also suggests that adjusting the central bank's reaction function "*should mean putting even more onus on the importance of trying to gauge in a broad sense, the relative strengths of demand-side versus supply-side components of shocks.*"

As noted above, increased credibility means that the central bank does not need to react as heavily to shocks in order to target inflation. This has the side effect of potentially increasing volatility. The model that AC&M use has an endogenous

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[3]   Monetary policy rules that indicate by how much nominal interest rates should be changed in response to differences between actual and targeted inflation and between actual and potential output.

supply-side. A step forward would be to explicitly model key features of the supply-side in order to enable central banks to take better account of key supply-side shocks, thereby more appropriately tailoring their responses to shocks.

An example of a central bank that has done this is the RBNZ with its Kiwi Inflation Targeting Technology (KITT) model. This explicitly models oil prices as directly affecting inflation, consumption, intermediate goods production and tradable goods production.[4] Beněs *et al* (2009) explain the model's response to an oil price shock. The conclusion reached from the model is that

> *"although the shock has a large initial impact on headline inflation, the inflation profile across the medium-term horizon is relatively benign. This is a direct result of the supply and demand channels through which oil affects the economy offsetting each other at longer horizons. The policy response is very small and the confidence bands are wide."*

Thus it appears that the RBNZ, for one, is putting more emphasis on the supply-side, allowing it to more accurately model and deal with supply-side shocks. This would result in more appropriate actions in the face of changing credibility.

Once inflation expectations are anchored on the target, then there will be less response to supply and demand shocks. Bean (2005) gives an example where an increased level of credibility "enhances the effectiveness of policy through its impact on

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[4]   See for example Beněs *et al.* (2009) Figure 2.1 on page 11 and Figure 2.2 on page 15.

expectations." He compares the impact of the oil price rises in 2004 with the oil price rises in the 1970s. Given what happened in the 1970s, it would be expected that inflation would rise and "market interest rates [would] move higher in the expectation of monetary tightening by central banks." This did not occur. In fact, "*inflation expectations…hardly moved.*" Bean gives higher credibility the credit for the small change in inflationary expectations.

A final point about changing credibility comes from the results of Shaumburg and Tambalotti (2007). They vary central bank credibility in a simple New Keynesian model showing that most of the gains from increasing credibility arise at relatively low levels of initial credibility and decline as credibility rises. Attention is also drawn to the non-linear relationship between credibility and welfare. The implication of this is that even a small loss in credibility can have a significant welfare impact. This gives a possible explanation as to why central bankers are so 'obsessed' with credibility.[5]

6   Where to from here?

Individuals all behave differently and this makes it difficult to estimate, in terms of parameter values, how much changing transparency will affect credibility and therefore inflation expectations and inflation. Future research could focus on

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[5]   Note that Shaumburg and Tambalotti (2007) define credibility "*in terms of the expected durability of policy commitments*" rather than "*the discrepancy between inflation expectations and the central bank's inflation target.*"

estimating these parameter changes by obtaining data for central banks (such as the RBNZ) for which there is evidence that increasing transparency has improved credibility and assisted in achieving and maintaining low and stable inflation. A central bank pushing for higher credibility could then use these estimates to develop alternative scenarios which have the dual purpose of (a) aiding the bank in determining its monetary policy, and (b) informing agents of the uncertainty surrounding the forecast, thus alleviating the potential credibility loss that may occur from deviating from a particular scenario.

Effort could also continue to be put into modelling supply-side and demand-side shocks to allow central banks to more accurately predict the effects of, and the appropriate responses to, such shocks.

7 Conclusion

In conclusion, credibility is important because of its effect on the level and volatility of inflation. Central bank transparency effectively builds and maintains credibility. Transparency can have some costs, but these costs shouldn't be overemphasised, and they tend to be short-run. As credibility changes, inflation expectations change; affecting the time lag between monetary policy actions and their effect. This influences the appropriate monetary policy response, with respect to both how supply and demand shocks are handled, and the length of the forecast horizon. This calls for a re-optimisation of the central bank's reaction function; if it isn't, then volatility may actually increase.

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